

Luís Teixeira, c. 1585: the earliest known extant chart with isogonic lines

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A nautical chart is preserved in the Navy Museum of Lisbon representing the eastern margin of the Pacific Ocean, from the Philippines, on the west (about 120° E), to about 150° W, on the east. The island of New Guinea occupies the center of the chart. Close to it, to the east, a group of islands is depicted identified as Yslas Salamonis (Salomon islands). The lack of a frame in the eastern margin, coupled with the position of the wind-rose system, suggests that this fragment was the left-most part of a planisphere centered on South America and made of four sheets of parchment. The manuscript is unsigned and undated but was most probably drawn between 1572 and 1594, by the Portuguese cartographer Luís Teixeira, as indicated by the type of lettering. A mesh of curved lines is depicted, labelled with values of magnetic declination, with an agonic line running through New Guinea. This makes of this chart the earliest known depiction of isogonic lines – cartographic or otherwise – made more than a century before Edmund Haley produced his famous isogonic chart of the Atlantic, in 1702.

While the symmetry of the isogonic line system relative to the equator may suggest some kind of conceptual model, the comparison with the outputs of modern geomagnetic models reveals a significant match with the spatial distribution of the magnetic declination in the region, during the last decades of the sixteenth century. This demonstrates that observed values were used to calculate the lines. In this paper we argue that such kind of representation is a sign of the systematic accumulation of data by the Portuguese pilots of the sixteenth century with the purpose of improving the accuracy of navigation: not for correcting the charts or for simply equating the values of magnetic declination to longitude, as is usually mentioned in the literature, but for finding an alternative method of determining the ship's position at sea.

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